PR; & vis, qua corpus idem P circum aliud quodvis ellipſeos punctum S revolvi poteſt, ſi CE & PS concurrant in E, erit ut $\frac{PE\,cub.}{SPq}$ (per corol. 3. prop. VII.) hoc eſt, ſi punctum S ſit umbilicus ellipſeos, ideoque PE detur, ut SPq reciproce. *Q. E. I.*

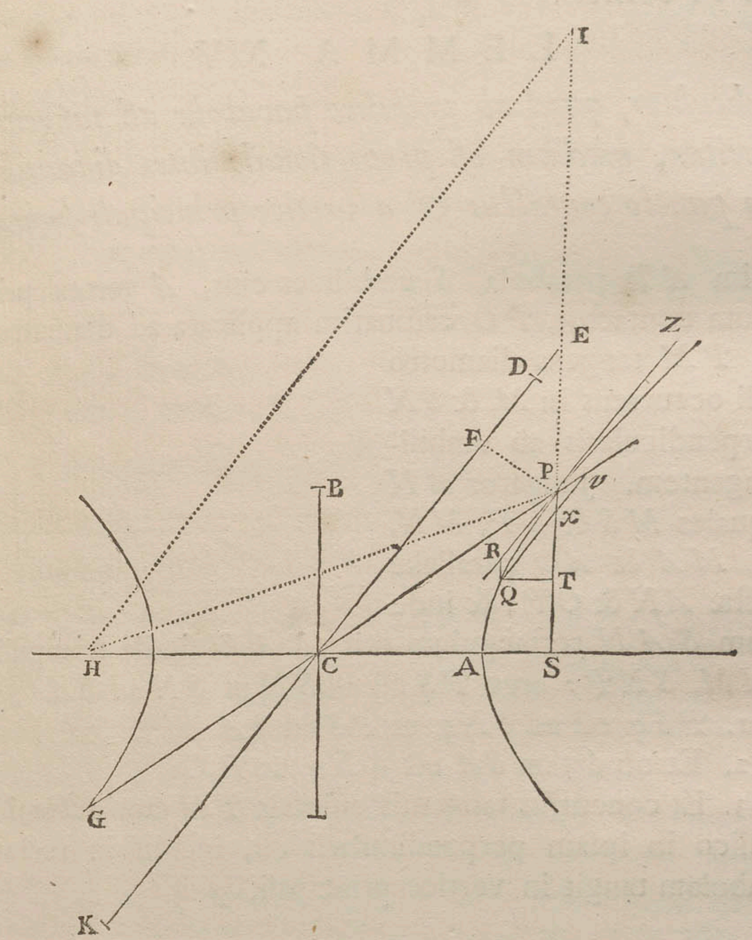
Eadem brevitate, qua traduximus problema quintum ad parabolam, & hyperbolam, liceret idem hic facere: verum ob dignitatem problematis, & uſum ejus in ſequentibus non pigebit caſus cæteros demonſtratione confirmare.

PROPOSITIO XII. PROBLEMA VII.

Moveatur corpus in hyperbola: requiritur lex vis centripetæ tendentis ad umbilicum figuræ.

Sunto CA, CB ſemiaxes hyperbolæ; PG, KD diametri aliæ conjugatæ; PF perpendiculum ad diametrum KD; & Qv ordinatim applicata ad diametrum GP. Agatur SP ſecans cum diametrum DK in E, tum ordinatim applicatam Qv in x, & compleatur parallelogrammum $QRPx$. Patet EP æqualem eſſe ſemiaxi tranſverſo AC, eo quod, acta ab altero hyperbolæ umbilico H linea HI ipſi EC parallela, ob æquales CS, CH æquentur ES, EI; adeo ut EP ſemidifferentia ſit ipſarum PS, PI, id eſt (ob parallelas IH, PR & angulos æquales IPR, HPZ) ipſarum PS, PH, quarum differentia axem totum $2AC$ adæquat. Ad SP demittatur perpendicularis QT. Et hyperbolæ latere recto principali (ſeu $\frac{2BCq}{AC}$) dicto L, erit $L \times QR$ ad $L \times Pv$ ut QR ad Pv, ſeu Px ad Pv, id eſt (ob ſimilia triangula Pxv, PEC) ut PE ad PC, ſeu AC ad PC. Erit etiam $L \times Pv$ ad $Gv \times Pv$ ut L ad Gv; & (ex natura conicorum) rectangulum GvP ad Qv *quad.* ut PCq ad CDq; & (per corol. 2. lem. VII.) Qv *quad.* ad Qx *quad.* punctis Q & P coeuntibus fit ratio æqualitatis; & Qx *quad.* ſeu Qv *quad.* eſt ad QTq ut EPq ad PFq, id eſt, ut CAq ad PFq, ſive (per lem. XII.) ut CDq ad CBq: & conjunctis his omnibus rationibus $L \times QR$ fit ad QTq ut $AC \times L \times PCq \times CDq$, ſeu $2CBq \times PCq \times CDq$ ad $PC \times Gv \times CDq \times CBq$, ſive ut $2PC$ ad Gv. Sed punctis P & Q

coeuntibus æquantur $2PC$ & Gv. Ergo & his proportionalia $L \times QR$ & QTq æquantur. Ducantur hæc æqualia in $\frac{SPq}{QR}$, & fiet $L \times SPq$ æquale $\frac{SPq \times QTq}{QR}$. Ergo (per corol. 1. & 5. prop. VI.) vis centripeta reciproce eſt ut $L \times SPq$, id eſt, reciproce in ratione duplicata diſtantiæ SP. *Q. E. I.*



Idem aliter.

Inveniatur vis, quæ tendit ab hyperbolæ centro C. Prodibit hæc diſtantiæ CP proportionalis. Inde vero (per corol. 3. prop. VII.) vis ad umbilicum S tendens erit ut $\frac{PE\,cub.}{SPq}$, hoc eſt, ob datam PE reciproce ut SPq. *Q. E. I.*